Managing internal inflammatory resorption

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Resorption is a pathological or physiological process involving the loss of dentine, cementum or bone. Depending on its position, it can be classified as internal or external.

Internal resorption can be subdivided into inflammatory and replacement. External resorption can be subdivided into inflammatory, replacement, cervical, surface and transient apical breakdown.

Internal inflammatory resorption

Internal inflammatory resorption (IIR) can result from damage to the predentine, either due to physical or chemical trauma or bacterial infection.

In active progressive internal inflammatory resorption lesions, the root canal coronal to the resorptive area is typically necrotic, while the pulp at the apex remains vital, supporting the odontoclasts and allowing lesion progression.

However, if tooth vitality is lost completely, as in the case presented in this article, resorption stops advancing. Clinical signs usually don't usually appear until the lesion is advanced, with internal inflammatory resorption teeth often asymptomatic.

Vitality testing during resorption may indicate reversible or irreversible pulpitis and advanced cases with infected necrotic root canals may exhibit symptoms of periapical periodontitis.

Diagnosis is usually based on the radiographic appearance along with signs and symptoms, although a cone beam computed tomography (CBCT) scan can be useful. Radiographically, the lesion has been described as a radiolucent, symmetrical round or oval ballooning out of the root canal wall (Patel, 2018; Mittal, 2014).

The following case presented is that of internal inflammatory resorption on an upper left lateral incisor.

Case study

A 57-year-old male attended the practice with generalised pain across the upper left side. The patient had been given amoxicillin by their own dentist and symptoms had reduced although not completely resolved.

Sensibility testing to the upper left teeth reviled the UL2 to be non-responsive in contrast to all other teeth, which responded normally. The UL1, UL2 and UL3 were all mildly tender to percussion. There was generalised tenderness from UL1 to UL4 in the buccal sulcus.

A periapical radiograph was exposed (Figure 1), which showed a large radiolucency around the apex of the UL2. The radiograph also showed a radiolucency relating to the root of the tooth consistent with internal inflammatory root resorption.

The patient reported no history of trauma to the area and there was only a small class

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Fig. 1: Preoperative radiograph showing large periapical area and radiolucency within the apical third of the canal space

III composite restoration in the tooth.

The radiolucency located in the apical third of the root appear centred and continuous with the outline of the canal, despite subsequent changes in the angle of the periapical.

For this reason, it is reasonable to assume a diagnosis of internal resorption – although the true diagnosis was difficult without access to a CBCT scan. A CBCT would have helped us understand the position of the defect as well as its extent.

It is possible for internal resorption to continue ballooning out until perforating the external wall of dentine. If this had occurred, it would have affected the treatment plan, particularly obturation where the use of a bioactive material, such as MTA or Biodentine, would have been more suitable (Bhuva, 2011).

Unfortunately, a CBCT was not available at the practice and the patient was not keen on outward referral, so we decided to continue without this extra information.

Endodontic treatment

The patient presented to me still in moderate discomfort and I initiated root canal treatment after anaesthetic, isolating with rubber dam and Wedjets.

Immediately after access, significant suppuration was noted. I irrigated with heated 3% sodium hypochlorite and coronally flared with Waveone Gold primary. An electronic apex locator was used, which confirmed a working length of 21.5mm with a size 20 K-file.

Fig. 2: Master apical file periapical showing apical stop at working length

A Waveone primary reciprocating file was taken to length easily before apical gauging was carried out and a size 55 master apical file selected. I stepped back using increasing hand files up to size 80 to create an apical taper and exposed the 55 MAF radiograph, which was just shy of the radiographic apex (Figure 2). I was happy there was a suitable apical stop for me to use a warm vertical compaction technique.

A final irrigation with sodium hypochlorite was agitated with the Endoactivator. However, I was unable to fully dry the canal with paper points. The tooth was dressed with calcium hydroxide, Cavit placed in the access cavity and the patient was booked for two weeks' time. Interappointment medication, such as calcium hydroxide, has been recommended due to the complex three-dimensional nature of internal resorption defects (Bhuva, 2011).

Follow-up

The patient reattended reporting complete resolution of symptoms.

Rubber dam was placed with Wedjets and the tooth re-accessed. Hypochlorite was used to rinse away the of the calcium hydroxide with the help of the Endoactivator.

Because of the complex apical anatomy, I wanted to try a master cone customisation technique. The tip of the 55 04

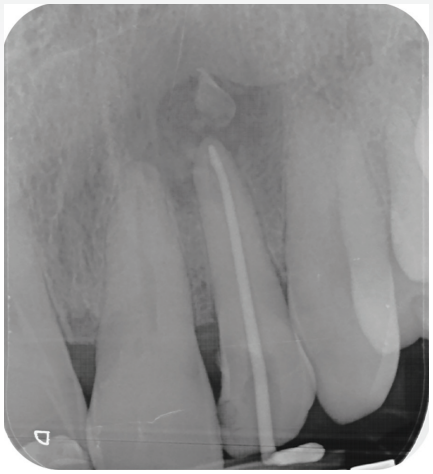

Fig. 3: Master cone periapical confirming fit at correct working length

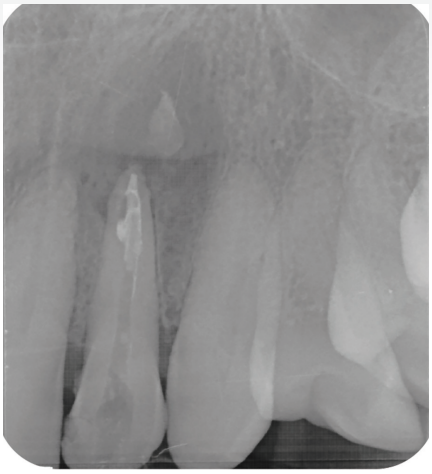

Fig. 4: Mid-fill periapical showing apical plug of gutta percha

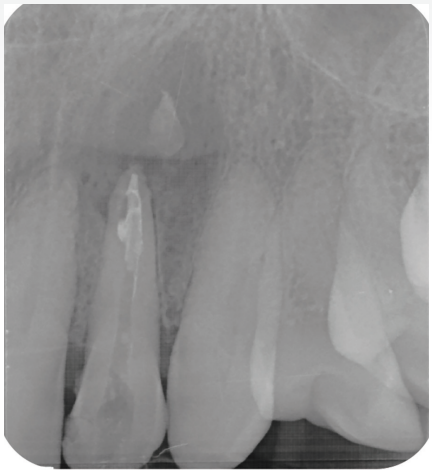

Fig. 5: Postoperative showing gutta percha filling the whole canal space and final composite restoration

gutta percha point was dipped into chloroform for one to two seconds and inserted to length with a couple of gentle pumps, before being removed, rinsed and dried while being careful to remember the orientation (Saatchi, 2011).

The cone was then reinserted in the same position and a master cone radiograph was taken (Figure 3). This confirmed the correct length before obturating.

A thorough final rinse sequence of 17% EDTA solution followed by heated 3% sodium hypochlorite both agitated with the Endoactivator to ensure contact with the resorption defect walls. The canal was dried with paper points and pulp canal sealer applied to the customised GP point prior to placing it at length. A System B narrow heated plugger was taken to 19mm before a down packing with a narrow cold plugger.

A mid-fill radiograph was taken (Figure 4) to confirm an apical plug of GP preventing any thermoplasticised GP extrusion when obturating the remaining canal. Finally, Obtura obturation system was used to fill the remaining canal space with regular down-packing to ensure as thorough 3D obturation as possible.

The access was restored with composite and a radiograph taken, showing a good apical seal and generally well condensed obturation.

Unfortunately, there was some extrusion of the calcium hydroxide medicament after the first appointment (first visible on Figure 3), which appeared on subsequent radiographs. This could affect healing (Orucoglu, 2008) and in future I would make efforts to contain with medicament within the canal space.

The patient has failed to return for a six-month review appointment to check on the periapical tissue healing. However, I am pleased with how this case turned out.

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